WA Commercial Building Energy Performance Standards – EUIt Development Workshop

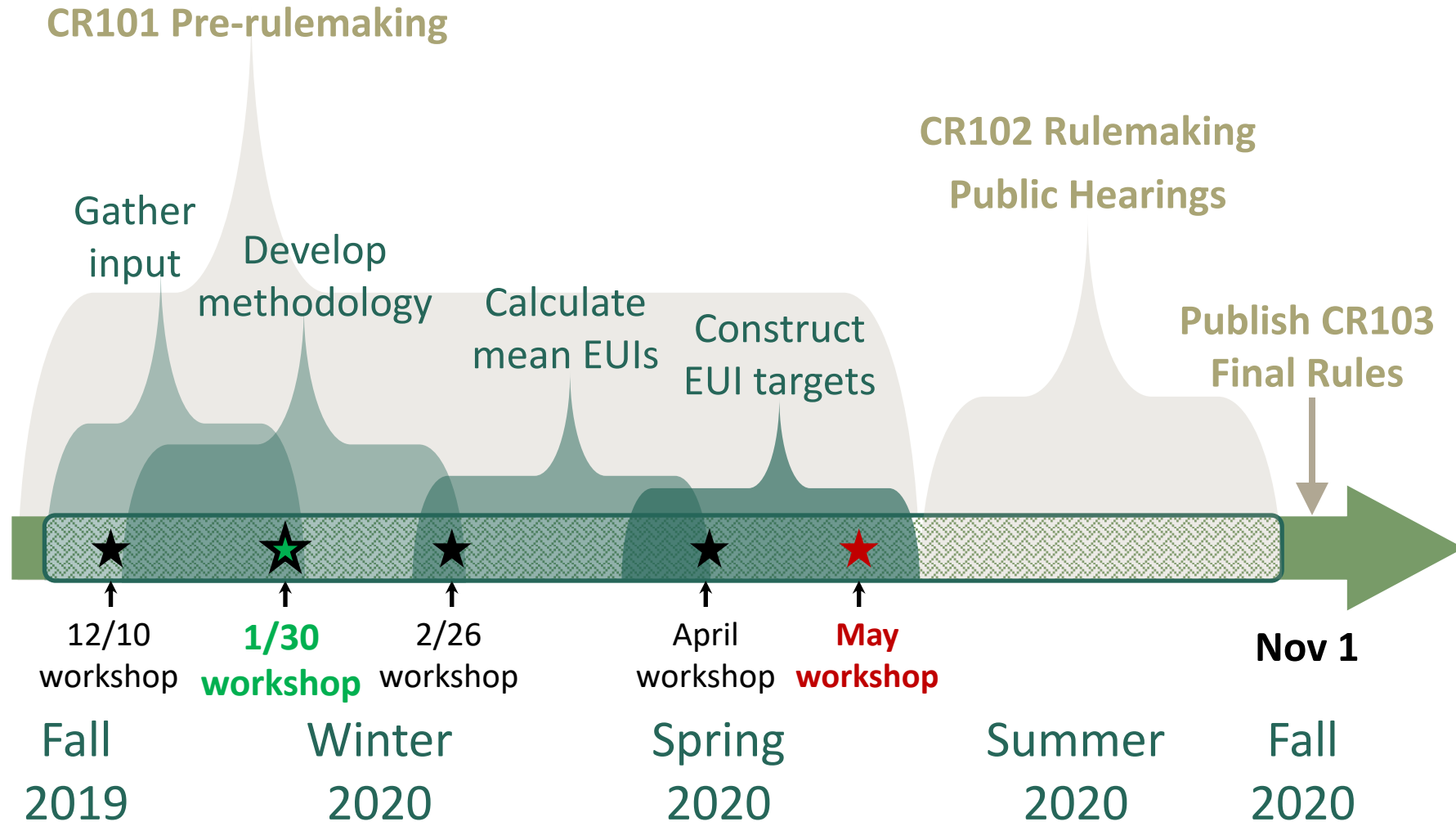January 30, 2020

Presented at: WA State Dept of Commerce

Prepared by: **SBW Consulting Team**

Agenda:

- Review EUI Target Development Process & Timeline
- Methodology Overview
- Methodology Discussion: Determinants of Energy Consumption
  - ☐ List energy use drivers
  - ☐ Discuss how they are being addressed
- Methodology Discussion: Target Setting
  - ☐ Criteria
  - ☐ Emissions reductions drivers
  - ☐ Framework
  - ☐ Newer construction

EUI Target Development Process

CR101 Pre-rulemaking

Gather input

Develop methodology

CR102 Rulemaking

Public Hearings

Calculate mean EUIs

Construct EUI targets

Publish CR103 Final Rules

12/10 workshop

1/30 workshop

2/26 workshop

April workshop

May workshop

Nov 1

Fall 2019

Winter 2020

Spring 2020

Summer 2020

Fall 2020

Methodology Overview

- Gather input

- Estimate means by building type
  - ☐ Decide on building types
  - ☐ Incorporate regional data
  - ☐ Consider unique buildings and energy uses

- Review normalization factors, adjust as needed

- Establish target setting criteria

- Adjust ASHRAE 100 targets

EUI Targets

How to Account for Variations in Energy Use

Determinants of Energy Consumption	Normalization Factors	Weighted Average EUIt	Exempt from HB1257	Built in to Mean EUI	New(er) Construction EUIt	...
Buildings w/ multiple activities (Mixed Use)		X				
Small % of floor area driving bldg energy use (servers, labs, restaurants, laundry)		X	*			
Vacancy		X	*	X		
Occupancy Density				X		
Operating Shift	X			X		
Building Type				X		
Building Size				X		
Standard Loads			*	X		
Unique Loads			*			
Climate/Weather				X		
Campus (master metered, central plant)		X		X		
Industrial/Manufacturing			X			
Vintage					X	
Heating Fuel Type				X		
Onsite Renewables				X		

Request for Input

- [Link to Request for Input form](#)

- [Link to upload input forms to the Commerce website](#) (Due by 2/14/2020)

Request for Public Input on EUI Target Methodology

At this point in the methodology development process, the Department of Commerce is seeking early input on normalization factors, unique energy using features, the EUI target setting criteria, the EUI target setting framework, and the approach for newer construction targets.

For supporting information, see Slide Deck from the January 30, 2020 EUI Target Methodology Workshop.

Deadline for Input:	Please submit input by February 14, 2020.
Upload Input to:	Department of Commerce Public Input Link
Date:	
Name:	
Title:	
Organization:	

Area of Input ▼	Request for Input ▼	PUBLIC INPUT ▼
Accounting for Variations in Energy Use	ASHRAE Standard 100 includes formulas and normalization factors to help building owners account for a number of key determinants of consumption when calculating building specific EUI targets. For example, building type, climate zone, vacancy ratios, operating hours, mixed use status, etc. (see slide 5 in Jan. 30 slide deck linked above).	

Determinants of Energy Consumption

■ What drives energy use in your building?
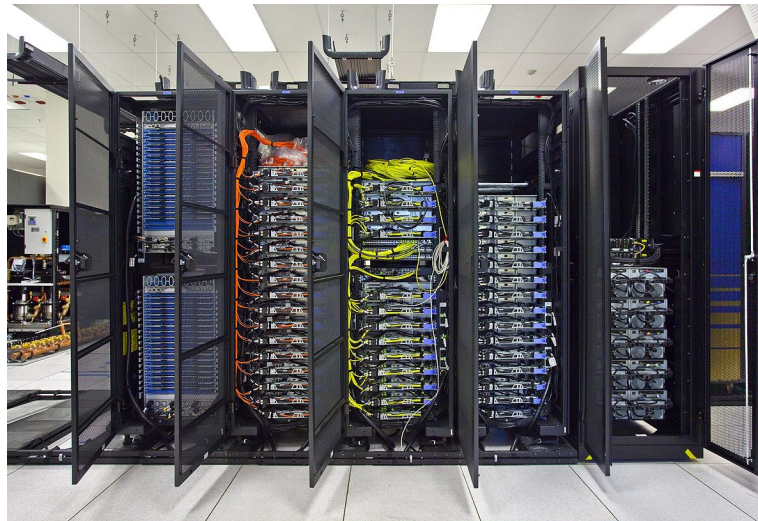
How to Account for Variations in Energy Use

Normalization Factors

Exemptions

Combined EUIts

New(er) Construction EUIts

Brainstorm Session

What else?

Methodology Discussion: Target Setting

- Target Setting Criteria
- Emissions Reductions Drivers
- Target Framework
- Develop & Assess Targets Against Criteria
- Present & Revise Targets

Target Setting Criteria

- Technical Criteria
- Adaptive Criteria
- Policy Context for GHG Reductions

Technical Criteria:
Input from 12/10/19 Workshop

Equal to or less than means

Maximize GHG reductions

Require early GHG reductions

Targets and/or policy design allow for whole building optimization across fuel types

Structured within a predictable framework for target reductions and market adaptation

Trigger market response and critical mass for capacity building

Adaptive Criteria:
Input from 12/10/19 Workshop

Encourage Early Adopters to Go Further

Market Readiness and Capacity, Especially in Remote Areas

Utility Program Readiness

Technical Path to Reductions

Cost-Effectiveness Backstop

Accessible Financing Mechanisms

Policy Context for GHG Reductions:

Index to statutory requirements?
- End point goals
- Interim targets

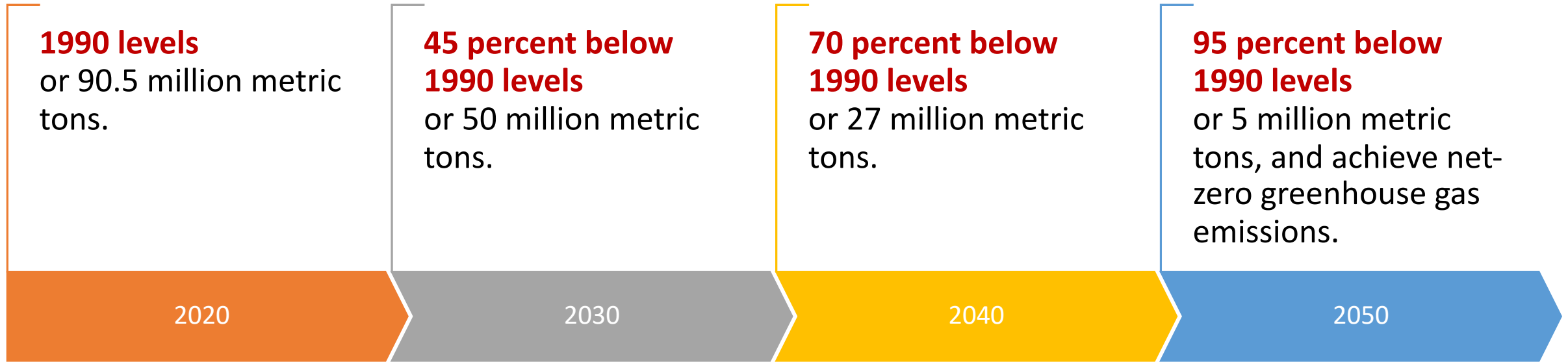**Aggregate sector-specific energy and emissions reduction targets?**
- Flow down from economy-wide targets

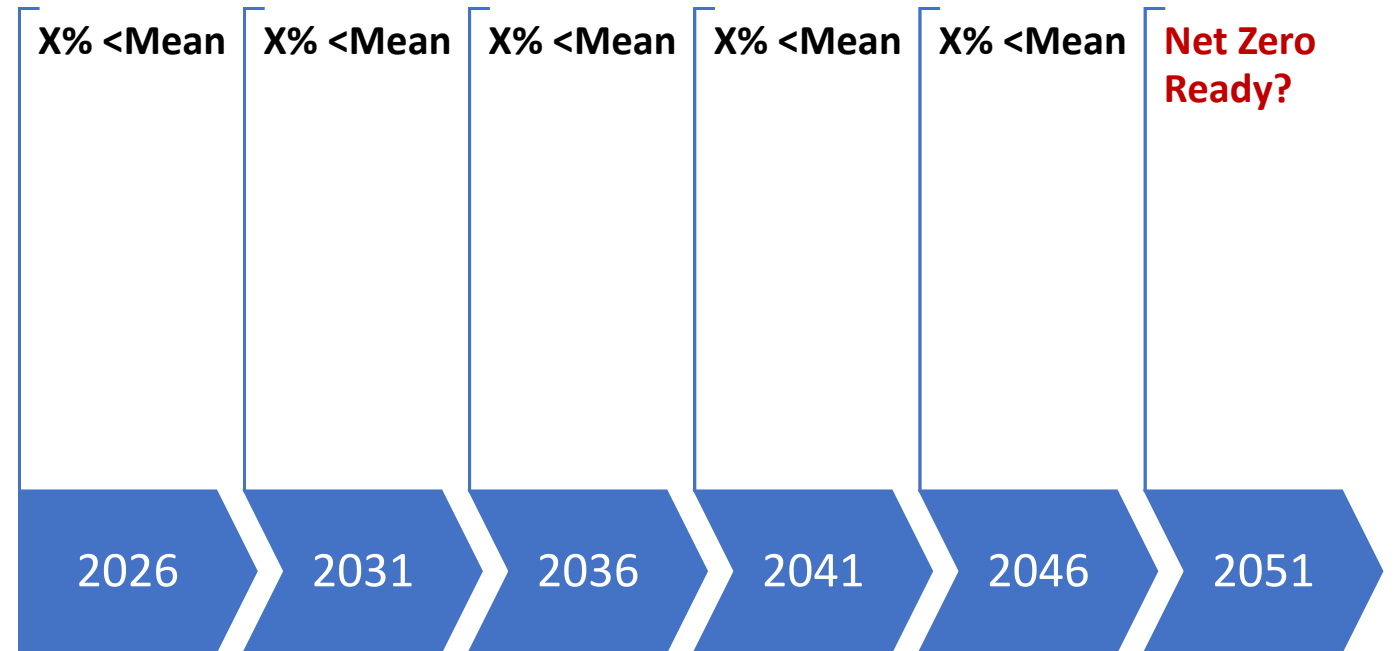**Mean EUI reductions required to meet aggregate emission reduction targets?**
- Flow down from sector-specific targets

Ecology Recommendations for Economy-Wide GHG Reductions (HB2311)

1990 levels
or 90.5 million metric tons.

45 percent below 1990 levels
or 50 million metric tons.

70 percent below 1990 levels
or 27 million metric tons.

95 percent below 1990 levels
or 5 million metric tons, and achieve net-zero greenhouse gas emissions.

2020

2030

2040

2050

Sample Target Setting Framework: Existing > 220k SF

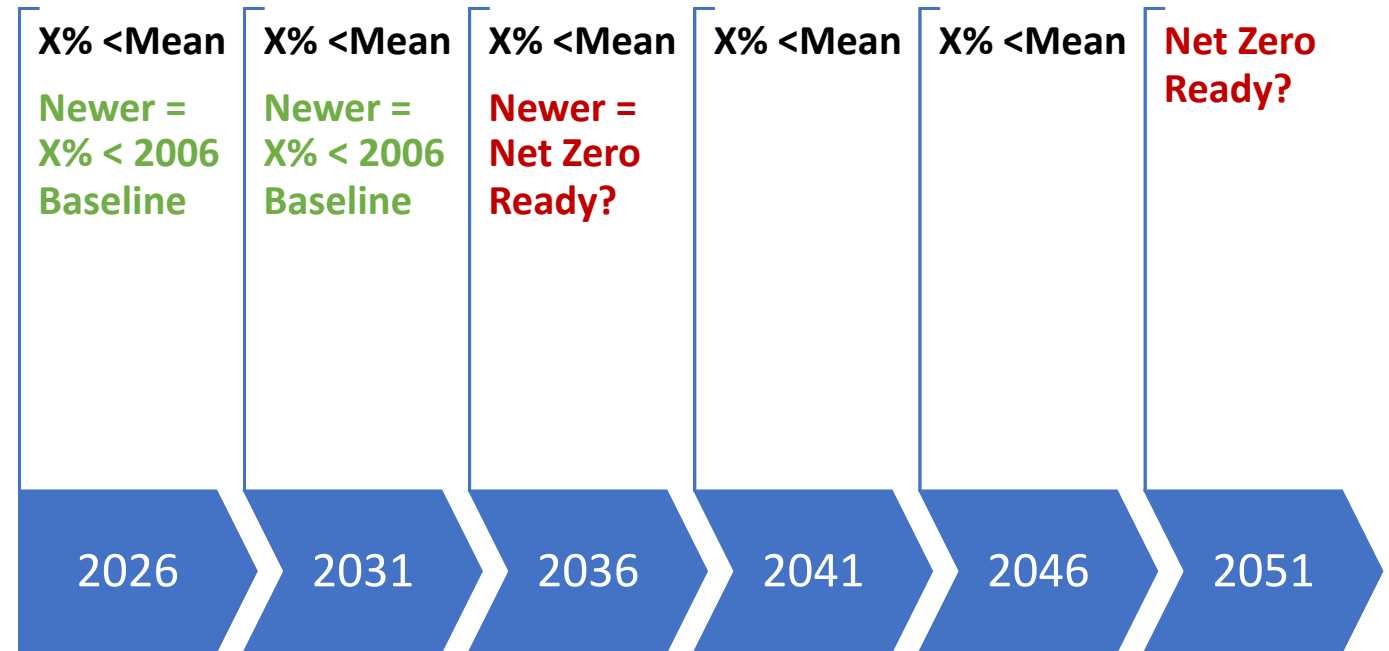| X% <Mean	X% <Mean	X% <Mean	X% <Mean	X% <Mean	**Net Zero Ready?**
2026	2031	2036	2041	2046	2051

Policy Context for Newer Construction

- **RCW** **19.27A.160**

- "...residential and nonresidential construction permitted under the 2031 state energy code must achieve a **70% reduction** in annual net energy consumption, using the adopted 2006 Washington state energy code as a baseline."

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Sample Target Setting Framework: Newer > 220k SF

X% <Mean	X% <Mean	X% <Mean	X% <Mean	X% <Mean	Net Zero Ready?
Newer = X% < 2006 Baseline	Newer = X% < 2006 Baseline	Newer = Net Zero Ready?			
2026	2031	2036	2041	2046	2051

Newer Construction Targets Analysis

01

Review 2006 Baseline EUIs

- Modeled
- Surveys

02

Determine Vintage Ranges for Targets

- Index to previous codes?
- Index to future codes?

03

Develop Targets

Evaluating EUI Targets Against Target Criteria

- Technical Criteria
- Adaptive Criteria
- Policy Context for GHG Reductions

EUI Target Development Process